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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,287	11/02/2005	Takeshi Azami	8074-1103	7821

466 7590 04/23/2009
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EXAMINER	
DANIELS, MATTHEW J	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
04/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Arguments

1. Applicant's arguments filed 16 April 2009 have been fully considered but they are not persuasive. The arguments are on the following grounds:

a) The results of the optimized pulse width are shown in Fig. 2 of the application, and demonstrate an unexpected tripling in the amount of nanohorns produced.

b) Kasuya produces nanohorns and uses a 500 ms pulse. Also see instant claim 19.

c) Extrapolating a mathematical relationship from raw data has been found to be impermissible. The M.P.E.P. does not pertain to this discussion of ratios. *Harries* has been cited by the Federal Circuit subsequent to 1952, and is quoted in a Wikipedia discussion of patentability.

d) A **ratio** is analyzed under a different standard of law that the Supreme Court's rulings regarding obviousness of **ranges**. The applied art references lack sufficient teaching, suggestion or motivation to produce the claimed ratio.

2. The arguments are on the following grounds:

a) Contrary to Applicants' arguments, the Examiner interprets the phenomenon in Fig. 2 to be an expected result. Note that the y-axis is an amount of nanohorns in grams, not an amount per unit time. It should be noted that Fig. 2 demonstrates that when a 0.5 second pulse width was used, approximately 7.0 grams of nanohorns were produced. Fig. 2 also demonstrates that when a 1.0 second pulse width was used, approximately 13 grams of nanohorns were produced. In other words, it has been demonstrated that doubling the ablation time produces approximately double the amount of nanohorns.

b,c) The references teach a ratio of 0.5 and suggest that longer irradiation times can be used, which would increase the pulse/pause ratio. It is unclear whether the continued reliance on *Harries* is directed to Claim 1. If so, it is submitted that this reliance is misplaced since the reference cited in the rejection actually teaches a ratio of 0.5 (500 ms pulse and 1 Hz cycle). No extrapolation is necessary.

Furthermore with respect to the *Harries* case, it should be noted that Applicants have not pointed to any majority opinion from the Federal Circuit or the Supreme Court which relies on the principal of law asserted to be present in *Harries*. While it is true that the case has been mentioned in *Pall Corp.* and the Wikipedia discussion of patentability, neither citation pertains to the principal of law advanced by Applicants.

The Examiner maintains that even with respect to instant Claim 19, the pulse/pause ratio or pulse length represent result effective variables that one of ordinary skill in the art would have optimized through routine experimentation.

d) It is unclear why a ratio of variables should be analyzed under a different standard than the variables themselves. The authority supporting Applicants' position, if different from *Harries*, has not been cited. The references teach a particular ratio, and suggest that the pulse can be increased in length to a point where it is continuous. Since there does not appear to be any unexpected result which would rebut the Examiner's position regarding optimization of ranges, the rejection is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/
Primary Examiner, Art Unit 1791
4/21/09